

Notice of Allowability

Application No.

09/912,041

Examiner

Jennifer M. Kennedy

Applicant(s)

ZHENG, LINGYI A.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE filed 3/11/2004.
2. ☒ The allowed claim(s) is/are 1-91 and 125-136.
3. ☒ The drawings filed on 24 July 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 12204, 51303 (2)
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kristine M. Strodthoff on May 26, 2004.

The application has been amended as follows:

In claim 1, line 3, after "implanting a surface-modifying agent" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 1, line 4, "capable of" has been deleted.

In claim 20, line 3, after "implanting a surface-modifying agent comprising an ionizable nitrogen material" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 20, line 4, "capable of" has been deleted.

In claim 25, line 3, after "implanting a surface-modifying agent comprising an ionizable silicon material" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 25, line 4, "capable of" has been deleted.

In claim 30, line 5, after "silicon-containing gas" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 30, line 5, "capable of" has been deleted.

In claim 33, line 5, after "silicon-containing gas" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 33, line 5, "capable of" has been deleted.

In claim 35, line 1, "comprisesa" has been replaced with – comprises a --.

In claim 36, line 6, "capable of" has been deleted.

In claim 44, line 1, "compriss" has been replaced with – comprises--.

In claim 55, line 8, "capable of" has been deleted.

In claim 60, line 6, "capable of" has been deleted.

In claim 66, line 6, "capable of" has been deleted.

In claim 72, line 8, "capable of" has been deleted.

In claim 81, line 9, "capable of" has been deleted.

In claim 87, line 9, "capable of" has been deleted.

In claim 125, line 3, after "implanting a surface-modifying agent" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 125, line 4, "capable of" has been deleted.

In claim 126, line 3, after "implanting a surface-modifying agent comprising an ionizable nitrogen material" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 126, line 4, "capable of" has been deleted.

In claim 127, line 3, after "implanting a surface-modifying agent comprising an ionizable silicon material" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 127, line 4, "capable of" has been deleted.

In claim 128, line 5, after "silicon-containing gas" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 128, line 5, "capable of" has been deleted.

In claim 128, line 8, "over the dielectric layer" has been deleted.

In claim 129, line 5, after "silicon-containing gas" – by accelerating ions of the surface-modifying agent – has been inserted.

In claim 129, line 5, "capable of" has been deleted.

In claim 129, line 8, "over the dielectric layer" has been deleted.

In claim 130, line 6, "capable of" has been deleted.

In claim 131, line 7, "capable of" has been deleted.

In claim 132, line 7, "capable of" has been deleted.

In claim 133, line 7, "capable of" has been deleted.

In claim 134, line 8, "capable of" has been deleted.

In claim 135, line 9, "capable of" has been deleted.

In claim 136, line 9, "capable of" has been deleted.

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The following is an examiner's statement of reasons for allowance: the prior art, either singly or in combination, fails to anticipate or render obvious, a method of implanting a surface-modifying agent by accelerating ions of the surface-modifying agent or by a low angle implantation into exposed surfaces of the nitride resistive material, the surface-modifying agent modifying said surfaces of the nitride resistive material to enhance nitride nucleation thereon, forming the nitride dielectric layer over the nitride resistive material and the nitride receptive material, wherein the nitride dielectric layer has a substantially uniform thickness over the nitride resistive material and the nitride receptive material (or lower electrode) as claimed in independent claims 1, 20, 25, 36, 55, 72, 81, 125, 126, 127, 130, 131, 134, and 135.

Further, the prior art, either singly or in combination, fails to anticipate or render obvious, a method of implanting a surface-modifying agent by accelerating ions of the surface-modifying agent or by a low angle implantation into the insulative material, the surface-modifying agent modifying the insulation material to enhance nitride nucleation thereon, and forming the dielectric layer on the insulative material and the semiconductive or conductive material (or lower electrode), wherein the dielectric layer has a substantially uniform thickness over the insulative material and the semiconductive material or conductive material (or the lower electrode) of the substrate as claimed in independent claims 30, 33, 60, 66, 87, 128, 129, 132, 133, and 136.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

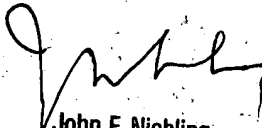
All claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, the restriction requirement made in Paper No. 7, mailed November 14, 2002 is hereby withdrawn. Claims 1-91, and 125-136 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (571) 272-1672. The examiner can normally be reached on Mon.-Fri. 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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